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## A PRELIMINARY DESCRIPTION OF FOSSIL WOODS COLLECTED FROM SITE BG-X, WEST OF BARAGOI, KENYA

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During the field researches on Kenya from 1982 to 1986, numerous petrified fossil woods of Miocene age were collected by the members of those field researches. The collected silicified woods were cut and ground to observe the internal structure and to identify by mean of photomicroscopes. As a result, all of the 66 fossil woods are quite similar in their anatomical structure and are regarded as belonging to a single species of the family Euphorbiaceae, subfamily Crotonoideae. In this preliminary report, a brief description of those fossil wood structure and their microphotographs are given.

### *Euphorbioxylon* sp. (Euphorbiaceae) Figs. 1-18

Materials : 820929-18, 8303-11, 8303-12, 8303-13, 8303-14, 84-1, 84-6, 84-7, 84-8, 84-9, 84-11, 84-12, 84-13, 84-15, 84-17, 84-18, 84-19, 84-22, 84-27, 84-32, 84-35, 86-1, 86-2, 86-5, 86-6, 86-7, 86-8, 86-9, 86-10, 86-11, 86-13, 86-14, 86-15, 86-17, 86-17', 86-18, 86-19, 86-20, 86-21, 86-22, 86-23, 86-24, 86-25, 86-27, 86-28, 86-29, 86-30, 86-31, 86-32, 86-33, 86-34, 86-35, 86-36, 86-37, 83-38, 86-52, 86-53, 86-54, 86-55, 86-56, 86-57, 86-58, 86-59, 86-60.

(66 specimens in total)

All of those specimens were collected at Site BG-X, 5 Km WNW of Nachola except no. 820929-18 which was collected at Muruilem. Most of the specimens are white in color and the preservation of the internal structure is generally poor, although a few specimens are better than the other.

Horizon : The lower part of Aka Aitepuh Formation, Early to Middle Miocene.

Description : Wood is diffuse porous. Although growth ring-like concentric pattern is shown by naked-eye, any continuous boundaries of growth rings are not observed under the microscope. Pores are evenly distributed; solitary and sometimes in radial couples, and rarely in radial triples. Solitary pores are oval or round in outline; moderately large,  $100-250 \times 100-200 \mu\text{m}$  in radial  $\times$  tangential diameters; walls thick (up to  $10 \mu\text{m}$ ). Vessel elements are short,  $350-500 \mu\text{m}$  long. Perforation plates are exclusively simple. Intervessel pits are arranged compactly and alternately; small polygonal (about  $6-8 \mu\text{m}$  in diameter) with narrow elliptical apertures. Spiral thickenings and tyloses are not observed.

Libri-form fibers constitute the ground mass of the wood. They are small polygonal with thick walls in cross section,  $10-20 \mu\text{m}$  in diameter; non-septate.

Wood parenchyma is moderately abundant; apotracheal diffuse and paratracheal. Paratracheal parenchyma is in vasicentric of 1-3 cells wide around pores; more abundant at the outer side of

pores than at their inner side. Parenchyma cells are oval, elliptical or polygonal in cross section, wider than fibers, 30-50  $\mu\text{m}$  in diameter. Crystals are invisible.

Rays are heterogeneous and narrow; mostly uniseriate, rarely biseriate; rather low, 3-28 cells or more tall; 20-50  $\times$  120-760  $\mu\text{m}$  in width and height. Rays are composed of procumbent cells and square cells and rarely of upright cells. Rhomboidal crystals are sometimes present.

Notes: All of the fossil woods investigated are characterized by diffuse arrangement of moderately large pores which are solitary or in multiple of 2-3 pores, simple perforation plates and alternate intervessel pitting, non-septate libriform fibers, apotracheal diffuse and paratracheal vasicentric parenchyma, and narrow, mostly uniseriate heterogeneous rays. Most of these characteristics are agree with those of recent species of subfamily Crotonoideae of Euphorbiaceae.

Mädel (1962) reviewed fossil woods of the Euphorbiaceae, and recognized five groups in the family. Following to her grouping, it is clear that the present fossils surely belong to the fifth group, that is Crotonoideae-group, because of their diffuse porous wood, simple perforations and non-septate libriform fibers. Although there are fairly many fossil wood species of the Euphorbiaceae reported from the Mesozoic and Tertiary sediments of the World, there are only three species of the Crotonoideae-group as follows : *Euphorbioxylon speciosum* Felix, *Heveloxylon microporosum* Kruse and *Aleurites miocenica* Watari (Mädel, 1962; Watari, 1956). Among the three genera, the present fossil woods are most resemble with *Euphorbioxylon* except the narrow and low rays. Therefore, the present fossils will surely be a new representative of the genus. There are numerous number of the extant genera and species in the Crotonoideae-group. Unfortunately I have not much enough information to compare the anatomical characters of the present fossils with those extant taxa. Therefore I would like to hesitate to describe it as a new species in this connection.

As described previously, all of the 66 specimens collected from the same stratum in Kenya were identified as the same one species. Of course, there is much variety of anatomical characters among those 66 specimens. Pore size is varying by specimens; no. 86-18 has larger pore while no. 86-34 has smaller pores as shown in Figs. 15 and 18. Pore density is also differing by specimens as shown in Figs. 15, 17 and 18 with fewer pores while fairly abundant in Fig. 16. Although it is not shown in figures, rays are lower in some specimens, while fairly taller in other specimens. In general, these differences in anatomical characters are sometimes significant in species level. Therefore, there are some possibilities that more than two fossil species of the same genus are included in those 66 specimens investigated. But the poor preservation of internal structure of those specimens inhibits to make clear it.

## REFERENCES

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- Watari, S. 1956. A large wood of *Aleurites* from the Miocene of Ishikawa Prefecture, Honsyu. Bot. Mag. Tokyo 69 : 468—473.

## EXPLANATION OF FIGURES

1-9. *Euphorbioxylon* sp., no. 84-8. 1-2 : Cross section showing evenly distributed, oval solitary and couple pores ( $\times 40$ ). 3 : Magnified cross section showing pores with vasicentric parenchyma and uniseriate rays ( $\times 100$ ). 4 : Tangential section showing narrow, mostly uniseriate, rays ( $\times 40$ ). 5 : Magnified tangential section showing uniseriate and biseriate rays in part ( $\times 100$ ). 6 : Tangential section showing short vessel elements and minute alternate intervessel pits ( $\times 100$ ). 7 : More magnified tangential section showing dense and minute polygonal intervessel pits ( $\times 200$ ). 8 : Radial section showing a heterogeneous uniseriate ray ( $\times 100$ ). 9 : Radial section showing a simple perforation plate (p) and heterogeneous rays ( $\times 100$ ).

10-18. *Euphorbioxylon* sp. 10-14 : no. 84-18. 10 : Cross section showing pore distribution ( $\times 40$ ). 11 : Tangential section showing uniseriate and rarely biseriate rays ( $\times 40$ ). 12 : Magnified tangential section showing rays and alternate intervessel pits ( $\times 10$ ). 13 : More magnified tangential section showing alternate dense polygonal intervessel pits ( $\times 400$ ). 14 : Radial section showing heterogeneous rays with rhomboidal crystals ( $\times 100$ ). 15-18 : Cross sections showing pore distribution ( $\times 40$ ). 15 : Larger and sparse pores (no. 86-18). 16 : Dense and medium pores (no. 84-15). 17 : Medium and sparse pores (84-7). Smaller and sparse pores (86-34).



